

THE INVENTION CLAIMED IS:

1. An illumination system comprising:  
viewing illumination at a surrogate's location; and  
recreating the illumination at a user's location as a relative perceived illumination.

5 2. The system as claimed in claim 1 wherein:  
viewing the illumination determines absolute luminance values; and  
recreating the illumination provides a relative perceived luminance.

3. The system as claimed in claim 1 wherein:  
recreating the illumination includes calculating the relative perceived illumination by  
10 at least one of scaling linearly from a midpoint illumination, scaling linearly  
from the brightest illumination, scaling non-linearly from a midpoint  
illumination, scaling with varying base illumination, and a combination  
thereof.

4. The system as claimed in claim 1 additionally comprising:  
15 viewing the illumination uses a camera and a light sensor directed outward from the  
surrogate; and  
recreating the illumination uses a projector directed inward towards a projection  
screen at the user's location.

5. The system as claimed in claim 1 wherein:  
20 viewing the illumination uses cameras and light sensors directed outward from the  
surrogate;  
recreating the illumination uses projectors directed inward towards projection screens  
around the user; and  
additionally comprising:  
25 viewing the user from cameras directed inward towards the user to provide an image  
of the user; and  
displaying the image of the user on the surrogate having illumination appropriate for  
the surrogate's location.

6. An illumination method comprising:  
30 viewing illumination at a surrogate's location in directions outward from the  
surrogate;  
determining the absolute luminance values of the illumination;

transmitting the absolute luminance values to a user's location;  
calculating relative perceived luminance values;  
recreating the illumination at the user's location in directions inward towards the user  
using a relative perceived illumination determined from the calculated relative  
perceived luminance values.

7. The method as claimed in claim 6 wherein:

recreating the illumination includes ramping the luminance between the directions  
inward towards the user to make the ramping and a derivative of the ramping  
continuous.

8. The method as claimed in claim 6 wherein:

calculating relative perceived luminance values includes calculating by at least one of  
scaling linearly from a midpoint illumination, scaling linearly from the  
brightest illumination, scaling non-linearly from a midpoint illumination,  
scaling with varying base illumination, and a combination thereof.

9. The method as claimed in claim 6 additionally comprising:

viewing the illumination uses cameras and two light sensors for each of the cameras,  
the cameras and light sensors directed outward from the surrogate; and  
recreating the illumination uses projectors directed inward towards projection screens  
at the user's location around the user, the projectors changing illumination by  
at least one of varying projector power, using an electrochromic glass, a  
combination of fixed and rotating polarizing filters, and a combination thereof.

10. The method as claimed in claim 6 wherein:

viewing the illumination uses cameras and two light sensors for each of the cameras,  
the cameras and light sensors directed outward from the surrogate; and  
recreating the illumination uses projectors directed inward towards projection screens  
at the user's location around the user; and  
additionally comprising:  
viewing the user from cameras directed inward towards the user to provide images of  
the user; and  
displaying the images of the user on the surrogate having illumination appropriate for  
the surrogate's location.

11. An illumination system comprising:  
video equipment for viewing illumination at a surrogate's location; and  
video equipment for recreating the illumination at a user's location as a relative  
perceived illumination.

5 12. The system as claimed in claim 11 wherein:  
the video equipment for viewing the illumination determines absolute luminance  
values; and  
the video equipment for recreating the illumination provides a relative perceived  
luminance.

10 13. The system as claimed in claim 11 wherein:  
video equipment for recreating the illumination includes calculating the relative  
perceived illumination by at least one of scaling linearly from a midpoint  
illumination, scaling linearly from the brightest illumination, scaling non-  
linearly from a midpoint illumination, scaling with varying base illumination,  
15 and a combination thereof.

14. The system as claimed in claim 11 additionally comprising:  
video equipment for viewing the illumination uses a camera and a light sensor  
directed outward from the surrogate; and  
video equipment for recreating the illumination uses a projector directed inward  
20 towards a projection screen at the user's location.

15. The system as claimed in claim 11 wherein:  
video equipment for viewing the illumination uses cameras and light sensors directed  
outward from the surrogate;  
video equipment for recreating the illumination uses projectors directed inward  
25 towards projection screens around the user; and  
additionally comprising:  
video equipment for viewing the user from cameras directed inward towards the user  
to provide an image of the user; and  
video equipment for displaying the image of the user on the surrogate having  
30 illumination appropriate for the surrogate's location.

16. A system of illumination comprising:  
cameras for viewing illumination at a surrogate's location in directions outward from  
the surrogate;  
light sensors for determining the absolute luminance values of the illumination;  
5 a transmitter for transmitting the absolute luminance values to a user's location;  
a computer for calculating relative perceived luminance values;  
projectors for recreating the illumination at the user's location in directions inward  
towards the user using a relative perceived illumination determined from the  
calculated relative perceived luminance values.

10 17. The system as claimed in claim 16 wherein:  
the projectors for recreating the illumination includes video equipment for ramping  
the luminance between the directions inward towards the user to make the  
ramping and a derivative of the ramping continuous.

15 18. The system as claimed in claim 16 wherein:  
the computer calculates relative perceived luminance values by at least one of scaling  
linearly from a midpoint illumination, scaling linearly from the brightest  
illumination, scaling non-linearly from a midpoint illumination, scaling with  
varying base illumination, and a combination thereof.

20 19. The system as claimed in claim 16 wherein:  
the cameras have two light sensors for each camera; and  
the projectors include video equipment for changing illumination including a  
projector power changer, electrochromic glass, a combination of fixed and  
rotating polarizing filters, and a combination thereof.

25 20. The system as claimed in claim 16 wherein:  
the cameras have two light sensors for each camera; and  
the projectors include equipment for changing illumination; and  
additionally comprising:  
cameras directed inward towards the user to provide images of the user; and  
the surrogate having displays for displaying the user with illumination appropriate for  
30 the surrogate's location.